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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/567,518	08/02/2006	Karl-Hermann Richter	011235.57289US	8921
23911 7590 11/06/2007 CROWELL & MORING LLP INTELLECTUAL PROPERTY GROUP P.O. BOX 14300 WASHINGTON, DC 20044-4300			EXAMINER VERDIER, CHRISTOPHER M	
			ART UNIT 3745	PAPER NUMBER
			MAIL DATE 11/06/2007	DELIVERY MODE PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/567,518	<b>Applicant(s)</b> RICHTER, KARL-HERMANN	
	<b>Examiner</b> Christopher Verdier	<b>Art Unit</b> 3745	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 02 August 2006 and 07 February 2006.
- 2a) ☐ This action is **FINAL**.      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 16-35 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 16-35 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 07 February 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date <u>2-7-06</u> . | 6) <input type="checkbox"/> Other: _____  |

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Receipt and entry of Applicant's Preliminary Amendment dated February 7, 2006 is acknowledged. The Substitute Specification of February 7, 2006 has been entered.

### ***Specification***

The abstract of the disclosure is objected to because it contains the phrases "The invention relates to" (line 1) and "According to this invention" (lines 3-4) which are implied and should be deleted. Correction is required. See MPEP § 608.01(b).

### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 16-30 and 33-35 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claims 16-25 are unclear as to scope, in that it is unclear if the combination of a rotor blade and a rotor having integral blading by capacitor discharge welding is being claimed, or the subcombination of a rotor blade is being claimed. In claim 16, line 4, "a rotor" is a double recitation of the rotors in claim 16, line 1. In claim 16, lines 4-5, "a capacitor discharge welding process" is a double recitation of the capacitor discharge welding in claim 16, line 2. In claim 26, lines 3-4, "in particular" renders the claim indefinite because it is unclear whether the limitation(s) following the phrase are part of the claimed invention. See MPEP § 2173.05(d). In claim 33, line 3, "a rotor blade" is a double recitation of the previously

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recited rotor blade. In claim 33, line 5, "a rotor mount" is a double recitation of the previously recited rotor mount.

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 16-19 and 31-32 (as far as claims 16-19 are definite and understood) are rejected under 35 U.S.C. 102(b) as being anticipated by Gillbanks 5,366,344 (figures 2-4). Disclosed is a rotor blade comprising a blade pan 7 and a blade footing 8 connected to the blade pan, the blade footing including a V-shaped cross section and the V-shaped cross section contacts a rotor 14. An acutely tapered end of an area having the V-shaped cross section contacts the rotor at 12, 13, and the area has a cross section which becomes wider from the acutely tapered end to the blade pan. The blade footing has a cross section adapted to an introduction of pressure forces in an area arranged between the blade pan and an area designed with the V-shaped cross section, since pressure forces may be applied to the cross section. A rotor mount defines a recess 11, and a V-shaped portion 8 of the blade footing is disposed within the recess of the rotor mount. Concerning the recitation in claim 16, lines 4-5 that the V-shaped cross section contacts a rotor in a capacitor discharge welding process, the recitation in claim 17 that the capacitor discharge welding process is a capacitor discharge stud welding process, and the recitation in claim 32 that

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the V-shaped portion is joined to the rotor mount by a capacitor discharge weld, these are product-by-process limitations. Even though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product-by-process claim does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process. *In re Thorpe*, 777 F.2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985).

Claims 16-25 and 31-32 (as far as claims 16-25 are definite and understood) are rejected under 35 U.S.C. 102(b) as being anticipated by Wellman 3,112,914. Disclosed is a rotor blade comprising a blade pan 14 and a blade footing 17 connected to the blade pan, the blade footing including a V-shaped cross section and the V-shaped cross section contacts a rotor 9. An acutely tapered end of an area having the V-shaped cross section contacts the rotor, and the area has a cross section which becomes wider from the acutely tapered end to the blade pan. The blade footing has a cross section adapted to an introduction of pressure forces in an area arranged between the blade pan and an area designed with the V-shaped cross section, since pressure forces may be applied to the cross section. The blade footing has two projections 16, 16 for introduction of a pressure force that each extend in a longitudinal direction of the blade footing. Each projection forms a shoulder arranged on a side of the blade footing. The blade footing has unnumbered grooves for introduction of a pressure force. The grooves extend in a longitudinal direction of the blade footing. The blade footing includes two grooves and each groove is arranged on a side of the blade footing. A rotor mount defines a recess 12, and a V-shaped

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portion 17 of the blade footing is disposed within the recess of the rotor mount. Concerning the recitation in claim 16, lines 4-5 that the V-shaped cross section contacts a rotor in a capacitor discharge welding process, the recitation in claim 17 that the capacitor discharge welding process is a capacitor discharge stud welding process, and the recitation in claim 32 that the V-shaped portion is joined to the rotor mount by a capacitor discharge weld, these are product-by-process limitations. Even though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product-by-process claim does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process. *In re Thorpe*, 777 F.2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985).

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 26-29, as far as they are definite and understood, are rejected under 35 U.S.C. 103(a) as being unpatentable over Telfer 3,609,841 in view of French Patent 2,226,241. Telfer (figure 3) discloses a method for manufacturing gas turbine rotors having integral blading, wherein a plurality of rotor blades comprised of a blade pan 7 and a footing (near 16) of the

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blade connected thereto are mounted on a rotor mount 4 that is a disk, by electron beam welding, wherein the footing of the blade includes a V-shaped cross section serving to provide contact between the rotor mount and the footing in the welding, and wherein thickened areas 9, 10 are machined off to a final contour of the gas turbine rotors having integral blading. An acutely tapered end near 15 of an area having the V-shaped cross section contacts the rotor mount, and the area has a cross section which becomes wider from the acutely tapered end to the blade pan.

However, Telfer does not disclose that the welding is capacitor discharge welding (claim 26), does not disclose that the welding is capacitor discharge stud welding (claim 27), and does not disclose that a pressure force is applied simultaneously to the rotor blade (claim 29).

French Patent 2,226,241 shows a blade welding process whereby rotor blades having a blade pan 4 are attached to a turbine rotor 1 by capacitor discharge stud welding. A pressure force is applied simultaneously to the rotor blade by jaws 5.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to attach the rotor blades of Telfer to the rotor mount by a capacitor discharge stud welding process, as opposed to an electron beam welding process, and to apply a pressure force simultaneously to the rotor blade, as taught by French Patent 2,226,241, since a capacitor discharge stud welding process could be used in combination with the V-shaped blade footing of Telfer to achieve the predictable result of securely attaching the blades to the rotor mount.

Claims 26-30, as far as they are definite and understood, are rejected under 35 U.S.C. 103(a) as being unpatentable over Gillbanks 5,366,344 in view of French Patent 2,226,241 and Crall 6,478,545. Gillbanks (figures 2-4) discloses a method for manufacturing gas turbine rotors having integral blading, wherein a plurality of rotor blades comprised of a blade pan 7 and a footing 8 of the blade connected thereto are mounted on a rotor mount 14 that is a disk, by linear friction welding, wherein the footing of the blade includes a V-shaped cross section serving to provide contact between the rotor mount and the footing in the welding. An acutely tapered end of an area having the V-shaped cross section contacts the rotor mount at 12, 13, and the area has a cross section which becomes wider from the acutely tapered end to the blade pan.

However, Gillbanks does not disclose that protruding material is machined off to a final contour of the gas turbine rotors having integral blading (claim 26), does not disclose that the welding is capacitor discharge welding (claim 26), does not disclose that the welding is capacitor discharge stud welding (claim 27), does not disclose that a pressure force is applied simultaneously to the rotor blade (claim 29), and does not disclose that the machining is milling (claim 30).

French Patent 2,226,241 shows a blade welding process whereby rotor blades having a blade pan 4 are attached to a turbine rotor 1 by capacitor discharge stud welding. A pressure force is applied simultaneously to the rotor blade by jaws 5.



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It would have been obvious at the time the invention was made to a person having ordinary skill in the art to attach the rotor blades of Gillbanks to the rotor mount by a capacitor discharge stud welding process, as opposed to a linear friction welding process, and to apply a pressure force simultaneously to the rotor blade, as taught by French Patent 2,226,241, since a capacitor discharge stud welding process could be used in combination with the V-shaped blade footing of Gillbanks to achieve the predictable result of securely attaching the blades to the rotor mount.

Crall (figures 1 and 5) shows a welding arrangement whereby blades 18 that are welded to a rotor 10 have protruding weld material 48 machined by milling at 50, for the purpose of removing excess weld material.

It would have been further obvious at the time the invention was made to a person having ordinary skill in the art to form the modified rotor of Gillbanks such that protruding weld material is machined off by milling to a final contour, as taught by Crall, for the purpose of removing excess weld material.

Claim 33, as far as it is definite and understood, is rejected under 35 U.S.C. 103(a) as being unpatentable over Gillbanks 5,366,344 in view of French Patent 2,226,241. Gillbanks discloses a method for joining a rotor blade to a rotor mount of a gas turbine rotor substantially as claimed, comprising the steps of disposing a V-shaped portion of a blade footing 8 of a rotor

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blade in a recess 11 defined by a rotor mount 14, and welding the V-shaped portion to the rotor mount by linear friction welding.

However, Gillbanks does not disclose that the welding is capacitor discharge welding.

French Patent 2,226,241 shows a blade welding process whereby rotor blades having a blade pan 4 are attached to a turbine rotor 1 by capacitor discharge welding.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to attach the rotor blades of Gillbanks to the rotor mount by a capacitor discharge welding process, as opposed to a linear friction welding process, as taught by French Patent 2,226,241, since a capacitor discharge stud welding process could be used in combination with the V-shaped blade footing of Gillbanks to achieve the predictable result of securely attaching the blades to the rotor mount.

Claim 34, as far as it is definite and understood, is rejected under 35 U.S.C. 103(a) as being unpatentable over Gillbanks 5,366,344 and French Patent 2,226,241 as applied to claim 33 above, and further in view of Goodwin 4,260,331. The modified method of Gillbanks shows all of the claimed subject matter except for the blade footing including a non-V-shaped portion disposed between the V-shaped portion and a projection of the rotor blade that extends along a length of the rotor blade and applying a pressure force to the projection.

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Goodwin shows a rotor blade 16 having a blade footing with a V-shaped portion 18 including a non-V-shaped portion 21 disposed between the V-shaped portion and a projection 20 of the rotor blade that extends along a length of the rotor blade, for the purpose of providing an inner flowpath liner for working fluid flowing through plural blades.

It would have been further obvious at the time the invention was made to a person having ordinary skill in the art to form the rotor blades in the modified arrangement of Gillbanks such that the blade footing includes a non-V-shaped portion disposed between the V-shaped portion and a projection of the rotor blade that extends along a length of the rotor blade, as taught by Goodwin, for the purpose of providing an inner flowpath liner for working fluid flowing through plural blades. Concerning the recitation of applying a pressure force to the projection, the French Patent 2,226,241 teaches applying a pressure force to the rotor blade by jaws 5. It would have been further obvious at the time the invention was made to a person having ordinary skill in the art to apply a pressure force to the projection of the rotor blades in the modified arrangement of Gillbanks, since choosing the location of the portion of the blade to apply the pressure force to is an engineering design choice, and one of ordinary skill in the art would have recognized that the force may be applied to any area of the blade.

#### ***Prior Art***

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

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Carrier and Thore are cited to show machining of rotor blades after welding to a rotor.

- Renner and Glorioso are cited to show chucks for holding workpieces in welding processes.

Note also that Goodwin and Telfer could also have been applied as they anticipate at least claim 16 under 35 U.S.C. 102, but are not applied at this time in order to avoid multiple rejections.

*Allowable Subject Matter*

Claim 35 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Christopher Verdier whose telephone number is (571) 272-4824. The examiner can normally be reached on Monday-Friday from 10:00-6:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward K. Look can be reached on (571) 272-4820. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

C.V.  
October 31, 2007



Christopher Verdier  
Primary Examiner  
Art Unit 3745